ERCB Energy Resources Conservation Board
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Directive 027

Revised edition, April 25, 2008

Shallow Fracturing Operations—Interim Controls, Restricted Operations, and Technical Review

The Energy Resources Conservation Board (ERCB/Board) has approved this directive on April 25, 2008.

Dan McFadyen
Chairman

The recent trend in Alberta to develop shallow gas reservoirs less than 200 metres (m) deep using high fracture volumes, pump rates, and pressures has caused the ERCB to consider the need for a review of the technical design requirements and regulatory options regarding fracturing. Information provided by industry to date shows that there may not always be a complete understanding of fracture propagation at shallow depths and that programs are not always subject to rigorous engineering design. As well, a Multistakeholder Advisory Committee on coalbed methane (CBM) identified in its preliminary report that oilfield and water well drilling and completions practices may not be adequate and should be reviewed. Consequently, the ERCB is instituting the following requirements.

What's New in This Edition

This edition of the directive includes the clarification in the Interim Controls section, second paragraph, below, which now states: "Effective **January 31, 2006**." As well, references to the Alberta Energy and Utilities Board (EUB) have been updated to reflect the new organization name ERCB. Updates in the July 24, 2007, edition cited compliance information in *Directive 019: ERCB Compliance Assurance—Enforcement*, with references to the matrix of risk items on the ERCB Web site where applicable.

Interim Controls

The ERCB expects licensees to conduct all drilling and completion operations at any depth with technical due diligence and in compliance with ERCB requirements. The ERCB also believes it is prudent for industry to carefully design and monitor fracturing operations shallower than 200 m to ensure protection of water wells and shallow aquifers.

Effective January 31, 2006, licensees must not conduct fracturing operations at depths less than 200 m unless they have fully assessed all potential impacts prior to initiating a fracturing program. Licensees must be prepared to provide the ERCB with an assessment demonstrating that a complete review was conducted and all potential impacts were mitigated in the designed fracture program. The ERCB requires such an assessment to include, as a minimum,

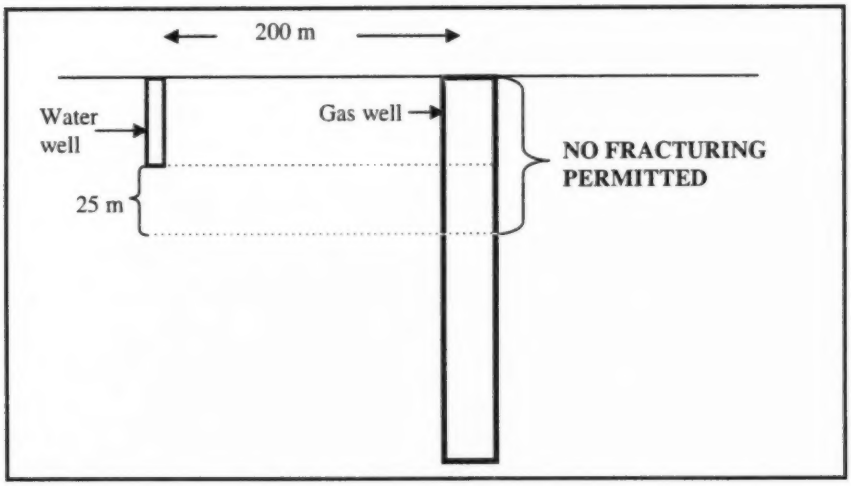
- the fracture program design, including proposed pumping rates, volumes, pressures, and fluids,

- a determination of the maximum propagation expected for all fracture treatments to be conducted,
- identification and depth of offset oilfield and water wells within 200 m of the proposed shallow fracturing operations,
- verification of cement integrity through available public data of all oilfield wells within a 200 m radius of the well to be fractured, and
- landholder notification of water wells within 200 m.

The ERCB will conduct random or select audits of fracturing operations at depths less than 200 m. The above-noted fracture assessments and any other supporting information must be made available for these audits within five working days of a request by the ERCB.

Restricted Operations

Also effective immediately, licensees are prohibited from conducting fracturing within a 200 m radius of water wells whose depth is within 25 m of proposed well fracturing depth (see diagram below). The ERCB believes this restriction provides a conservative safety margin based on existing fracturing propagation data available to the ERCB.



Additionally, all fracture treatments must

- use only non-toxic fracture fluids above the base of groundwater protection,
- be designed so that no zone containing non-saline water is contaminated, and
- not reach any other wellbore, including both oilfield wells and water wells, at any point during the process of fracturing.

The above interim controls and restrictions apply to both new wells and recompletion of existing wellbores.

Compliance Assurance

Failure to conduct an assessment prior to conducting a shallow fracturing operation will result in High Risk enforcement action. As well, any fracture treatment within the restricted area of 200 m of a water well will also result in High Risk enforcement action. Failure to supply the assessment information to the ERCB within 5 working days of a request will result in Low Risk enforcement action. Persistent noncompliance will result in escalating consequences.

The ERCB's enforcement process is specified in *Directive 019: ERCB Compliance Assurance—Enforcement*. A list of risk-assessed noncompliances is available on the Web at ERCB Home : Industry Zone : Compliance and Enforcement : Risk Assessed Noncompliance.

Technical Review Committee

The ERCB believes that although existing oilfield drilling and completion requirements are adequate for deeper formations, fracturing of shallow formations warrants further review because it is a relatively new practice. The ERCB, in consultation with Alberta Environment, will establish a new multistakeholder technical review committee to evaluate current industry fracturing practices and assess the need for appropriate regulatory controls or industry recommended practices (IRPs), with a targeted completion date in late 2006.

Questions regarding this directive should be directed to the ERCB Well Operations Section: telephone 403-297-5290, fax 403-297-2691, or e-mail ercb.welloperations@ercb.ca.